

## Search Plan and Results

### Question

[Is dietary energy density associated with adiposity in children? \(DGAC 2010\)](#)

### Date Searched

6/25/2009

### Inclusion Criteria

- January 1980 to June 2009
- Human subjects
- English language
- International
- Sample size: Minimum of 10 subjects per study arm; preference for larger sizes, if available
- Dropout rate:
- Ages: Children zero to 18 years
- Populations: Healthy, those with elevated chronic disease risk and those diagnosed with the highly prevalent chronic diseases (CHD or CVD, hypertension, type 2 diabetes, osteoporosis, osteopenia and obesity).

### Exclusion Criteria

- Medical treatment or therapy
- Diseased subjects
- Hospitalized patients
- Malnourished or third-world populations, or disease incidence not relative to US population, (e.g., malaria)
- Animal studies
- In vitro studies
- Articles not peer reviewed (web sites, magazine articles, Federal reports, etc.)
- Cross-sectional studies.

### Search Terms: Search Vocabulary

("energy density" OR caloric density OR energy dense) AND ("Body Weight"[Mesh] OR "Body Mass Index"[Mesh])

### Electronic Databases

Pubmed.

**Total hits from all electronic database searches: 184**

**Total articles identified to review from electronic databases: 35**

Articles Identified Via Handsearch or Other Means

Articles identified via hand search: 1

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Summary of Articles Identified to Review

**Number of Primary Articles Identified: 5**

**Number of Review Articles Identified: 0**

**Total Number of Articles Identified: 5**

**Number of Articles Reviewed but Excluded: 31**

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List of Articles Included for Evidence Analysis

### **Included Articles (5)**

Alexy U, Sichert-Hellert U, Kersting M, Schultze-Pawlitscko V. Pattern of long-term fat intake and BMI during childhood and adolescence-results of the DONALD Study. *Int J Obes Metab Disord*. 2004; 28(10): 1, 203-1, 209.

Johnson L, Mander AP, Jones LR, Emmett PM, Jebb SA. [Energy-dense, low-fiber, high-fat dietary pattern is associated with increased fatness in childhood](#). *Am J Clin Nutr*. 2008 Apr; 87(4): 846-854. PMID: 18400706.

Johnson L, Mander AP, Jones LR, Emmett PM, Jebb SA. [A prospective analysis of dietary energy density at age 5 and 7 years and fatness at 9 years among UK children](#). *Int J Obes (Lond)*. 2008 Apr; 32(4): 586-593. Epub 2007 Oct 2. PMID: 17912267.

Johnson L, van Jaarsveld CH, Emmett PM, Rogers IS, Ness AR, Hattersley AT, Timpson NJ, Smith GD, Jebb SA. [Dietary energy density affects fat mass in early adolescence and is not modified by FTO variants](#). *PLoS One*. 2009; 4(3): e4594. Epub 2009 Mar 4. PMID: 19259258; PMCID: PMC2644761.

McCaffrey TA, Rennie KL, Kerr MA, Wallace JM, Hannon-Fletcher MP, Coward WA, Jebb SA, Livingstone MB. [Energy density of the diet and change in body fatness from childhood to](#)

[adolescence: is there a relation?](#) *Am J Clin Nutr.* 2008 May; 87(5): 1, 230-1, 237. PMID: 18469244.

## List of Excluded Articles with Reason

Article (A-L)	Reason for Exclusion
Briefel RR, Crepinsek MK, Cabili C, Wilson A, Gleason PM. <a href="#">School food environments and practices affect dietary behaviors of US public school children.</a> <i>Diet Assoc.</i> 2009 Feb; 109(2 Suppl): S91-S107. PMID: 19166677.	Does not answer the question; focuses on school environment and calories from foods, but no body weight measures.
Briefel RR, Wilson A, Gleason PM. <a href="#">Consumption of low-nutrient, energy-dense foods and beverages at school, home, and other locations among school lunch participants and nonparticipants.</a> <i>J Am Diet Assoc.</i> 2009 Feb; 109(2 Suppl): S79-S90. PMID: 19166676.	Does not answer the question; focuses on school environment, home behaviors and calories from foods, but no body weight measures.
Brown KH, Sanchez-Griñan M, Perez F, Peerson JM, Ganoza L, Stern JS. <a href="#">Effects of dietary energy density and feeding frequency on total daily energy intakes of recovering malnourished children.</a> <i>Am J Clin Nutr.</i> 1995 Jul; 62(1): 13-18. PMID: 7598055.	Subjects are malnourished.
Caballero B. <a href="#">Obesity prevention in children: Opportunities and challenges.</a> <i>Int J Obes Relat Metab Disord.</i> 2004 Nov; 28 Suppl 3: S90-S95. Review. PMID: 15543227.	Study is a narrative review.
Epstein LH, Paluch RA, Beecher MD, Roemmich JN. <a href="#">Increasing healthy eating vs. reducing high energy-dense foods to treat pediatric obesity.</a> <i>Obesity (Silver Spring).</i> 2008 Feb; 16(2): 318-326. PMID: 18239639; PMCID: PMC2408744.	Does not answer the question; examines high energy-dense foods, not dietary energy density.
Epstein LH, Robinson JL, Temple JL, Roemmich JN, Marusewski AL, Nadbrzuch RL. <a href="#">Variety influences habituation of motivated behavior for food and energy intake in children.</a> <i>Am J Clin Nutr.</i> 2009 Mar; 89(3): 746-754. Epub 2009 Jan 28. PMID: 19176724; PMCID: PMC2667657.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Fox MK, Dodd AH, Wilson A, Gleason PM. <a href="#">Association between school food environment and practices and body mass index of US public school children.</a> <i>J Am Diet Assoc.</i> 2009 Feb; 109(2 Suppl): S108-S117. PMID: 19166665.	Study design is cross-sectional.
Fox MK, Gordon A, Nogales R, Wilson A. <a href="#">Availability and consumption of competitive foods in US public schools.</a> <i>J Am Diet Assoc.</i> 2009 Feb; 109(2 Suppl): S57-S66. PMID: 19166673.	Does not answer the question; focuses on school environment and calories from foods, but no body weight measures or relationship to obesity.
Hartstein J, Cullen KW, Reynolds KD, Harrell J, Resnicow K, Kennel P; STOPP T2D Prevention Study Group. <a href="#">Impact of portion-size control for school a la carte items: Changes in kilocalories and macronutrients purchased by middle school students.</a> <i>J Am Diet Assoc.</i> 2008 Jan; 108(1): 140-144. PMID: 18156001.	Does not answer the question; focuses on school environment and calories from foods, but no body weight measures or relationship to obesity.

Hurley KM, Oberlander SE, Merry BC, Wroblewski MM, Klassen AC, Black MM. <a href="#">The healthy eating index and youth healthy eating index are unique, nonredundant measures of diet quality among low-income, African American adolescents.</a> <i>J Nutr.</i> 2009 Feb; 139(2): 359-364. Epub 2008 Dec 11. PMID: 19074210; PMCID: PMC2646206.	Study design is cross-sectional.
Islam MM, Peerson JM, Ahmed T, Dewey KG, Brown KH. <a href="#">Effects of varied energy density of complementary foods on breast-milk intakes and total energy consumption by healthy, breastfed Bangladeshi children.</a> <i>Am J Clin Nutr.</i> 2006 Apr; 83(4): 851-858. PMID: 16600938.	Does not answer the question; energy density of food intake related to breast-milk intake and not body weight.
Kral TV, Berkowitz RI, Stunkard AJ, Stallings VA, Brown DD, Faith MS. <a href="#">Dietary energy density increases during early childhood irrespective of familial predisposition to obesity: Results from a prospective cohort study.</a> <i>Int J Obes (Lond).</i> 2007 Jul; 31(7): 1, 061-1, 067. Epub 2007 Feb 20. PMID: 17589540.	Does not answer the question.
Kral TV, Stunkard AJ, Berkowitz RI, Stallings VA, Brown DD, Faith MS. <a href="#">Daily food intake in relation to dietary energy density in the free-living environment: A prospective analysis of children born at different risk of obesity.</a> <i>Am J Clin Nutr.</i> 2007 Jul; 86(1): 41-47. PMID: 17616761.	Does not measure body weight.
Leahy KE, Birch LL, Rolls BJ. <a href="#">Reducing the energy density of an entrée decreases children's energy intake at lunch.</a> <i>J Am Diet Assoc.</i> 2008 Jan; 108(1): 41-48. PMID: 18155988.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Leahy KE, Birch LL, Rolls BJ. <a href="#">Reducing the energy density of multiple meals decreases the energy intake of preschool-age children.</a> <i>Am J Clin Nutr.</i> 2008 Dec; 88(6): 1, 459-1, 468. PMID: 19064504.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Lin CA, Manary MJ, Maleta K, Briend A, Ashorn P. <a href="#">An energy-dense complementary food is associated with a modest increase in weight gain when compared with a fortified porridge in Malawian children aged 6-18 months.</a> <i>J Nutr.</i> 2008 Mar; 138(3): 593-598. PMID: 18287372.	Study subjects are malnourished.
Lioret S, Volatier JL, Lafay L, Touvier M, Maire B. <a href="#">Is food portion size a risk factor of childhood overweight?</a> <i>Eur J Clin Nutr.</i> 2009 Mar; 63(3): 382-391. Epub 2007 Nov 21. PMID: 18030311.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Lorson BA, Melgar-Quinonez HR, Taylor CA. <a href="#">Correlates of fruit and vegetable intakes in US children.</a> <i>J Am Diet Assoc.</i> 2009 Mar; 109(3): 474-478. PMID: 19248865.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.

Article (M-S)	Reason for Exclusion
Maffei C, Grezzani A, Perrone L, Del Giudice EM, Saggese G, Tatò L. <a href="#">Could the savory taste of snacks be a further risk factor for overweight in children?</a> <i>J Pediatr Gastroenterol Nutr.</i> 2008 Apr; 46(4): 429-437. PMID: 18367957.	Study design is cross-sectional.

Matheson DM, Robinson TN, Varady A, Killen JD. <a href="#">Do Mexican-American mothers' food-related parenting practices influence their children's weight and dietary intake?</a> <i>J Am Diet Assoc.</i> 2006 Nov; 106(11): 1, 861-1, 865. PMID: 17081838.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Mendoza JA, Drewnowski A, Cheadle A, Christakis DA. <a href="#">Dietary energy density is associated with selected predictors of obesity in U.S. Children.</a> <i>J Nutr.</i> 2006 May; 136(5): 1, 318-1, 322. PMID: 16614423.	Study design is cross-sectional.
Mrdjenovic G, Levitsky DA. <a href="#">Children eat what they are served: The imprecise regulation of energy intake.</a> <i>Appetite.</i> 2005 Jun; 44(3): 273-282. Epub 2005 Apr 14. PMID: 15927729.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Murakami K, Sasaki S, Takahashi Y, Uenishi K; Japan Dietetic Students' Study for Nutrition and Biomarkers Group. <a href="#">Dietary energy density is associated with body mass index and waist circumference, but not with other metabolic risk factors, in free-living young Japanese women.</a> <i>Nutrition.</i> 2007 Nov-Dec; 23(11-12): 798-806. PMID: 17936194.	Study subjects are adults.
Newby PK. <a href="#">Are dietary intakes and eating behaviors related to childhood obesity? A comprehensive review of the evidence.</a> <i>J Law Med Ethics.</i> 2007 Spring; 35(1): 35-60. Review. PMID: 17341216.	Study is a narrative review.
Phillips SM, Bandini LG, Naumova EN, Cyr H, Colclough S, Dietz WH, Must A. <a href="#">Energy-dense snack food intake in adolescence: Longitudinal relationship to weight and fatness.</a> <i>Obes Res.</i> 2004 Mar; 12(3): 461-472. PMID: 15044663.	Does not answer the question; examined high energy-dense foods, not dietary energy density.
Pridham K, Kosorok MR, Greer F, Carey P, Kayata S, Sondel S. <a href="#">The effects of prescribed versus ad libitum feedings and formula caloric density on premature infant dietary intake and weight gain.</a> <i>Nurs Res.</i> 1999 Mar-Apr; 48(2): 86-93. PMID: 10190835.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Rangan AM, Randall D, Hector DJ, Gill TP, Webb KL. <a href="#">Consumption of 'extra' foods by Australian children: Types, quantities and contribution to energy and nutrient intakes.</a> <i>Eur J Clin Nutr.</i> 2008 Mar; 62(3): 356-364. Epub 2007 Mar 14. PMID: 17356553.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.
Receveur O, Morou K, Gray-Donald K, Macaulay AC. <a href="#">Consumption of key food items is associated with excess weight among elementary-school-aged children in a Canadian first nations community.</a> <i>J Am Diet Assoc.</i> 2008 Feb; 108(2): 362-366. PMID: 18237583.	Study design is cross-sectional.
Renzaho AM, Swinburn B, Burns C. <a href="#">Maintenance of traditional cultural orientation is associated with lower rates of obesity and sedentary behaviours among African migrant children to Australia.</a> <i>Int J Obes (Lond).</i> 2008 Apr; 32(4): 594-600. Epub 2008 Feb 5. PMID: 18253161.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.

Article (T-Z)	Reason for Exclusion
Temple JL, Giacomelli AM, Roemmich JN, Epstein LH. <a href="#">Dietary variety impairs habituation in children.</a> <i>Health Psychol.</i> 2008 Jan; 27(1 Suppl): S10-S19. PMID: 18248101; PMCID: PMC2291292.	Does not answer the question; did not examine the relationship between dietary energy density and adiposity.

Thomson M, Spence JC, Raine K, Laing L. [The association of television viewing with snacking behavior and body weight of young adults.](#) *Am J Health Promot.* 2008 May-Jun; 22(5): 329-335. PMID: 18517093.

Does not answer the question; did not examine the relationship between dietary energy density and adiposity.